

~~<110> Anderson, Christen M.
Clevenger, William~~

~~X120> COMPOSITIONS AND METHODS FOR REGULATING
ENDOGENOUS INHIBITOR OF ATP SYNTHASE, INCLUDING
TREATMENT FOR DIABETES~~

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<141> 2002-02-27

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 Arg Tyr Ile Arg Ser
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<400> 10
 Arg Lys Lys Arg Arg Gln Arg Arg
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 aggaagaagc ggagacagag a

21

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 <213> Rattus norvegicus

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cgagaagctg gtggggcctt cgggaaacga gagaaggctg aagaggatcg gtacttccga 180
 gagaagacta gagagcagct ggctgccttg aagaagcacc atgaagatga gattgaccac 240
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 tacctaaaga atagttagca ttga 324

<210> 13
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 <212> PRT
 <213> Rattus norvegicus

<400> 13
 Met Ala Gly Ser Ala Leu Ala Val Arg Ala Arg Leu Gly Val Trp Gly
 1 5 10 15
 Met Arg Val Leu Gln Thr Arg Gly Phe Gly Ser Asp Ser Ser Glu Ser
 20 25 30
 Met Asp Ser Gly Ala Gly Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly
 35 40 45
 Lys Arg Glu Lys Ala Glu Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg
 50 55 60
 Glu Gln Leu Ala Ala Leu Lys Lys His His Glu Asp Glu Ile Asp His
 65 70 75 80
 His Ser Lys Glu Ile Glu Arg Leu Gln Lys Gln Ile Glu Arg His Lys
 85 90 95
 Lys Lys Ile Lys Tyr Leu Lys Asn Ser Glu His
 100 105

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 <211> 75
 <212> DNA
 <213> Rattus norvegicus

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 caaaccgag gcttc 75

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 gtcgggtccct cacagagtgg cccgtatcac tccccacgtc tgtagacaca tggctttgaa 420
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 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 509

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<213> Mus musculus

<400> 16

Met Ala Gly Ser Ala Leu Ala Val Arg Ala Arg Phe Gly Val Trp Gly
 1 5 10 15
 Met Lys Val Leu Gln Thr Arg Gly Phe Val Ser Asp Ser Ser Asp Ser
 20 25 30
 Met Asp Thr Gly Ala Gly Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly
 35 40 45
 Lys Arg Glu Lys Ala Glu Glu Asp Arg Tyr Phe Arg Glu Lys Thr Lys
 50 55 60
 Glu Gln Leu Ala Ala Leu Arg Lys His His Glu Asp Glu Ile Asp His
 65 70 75 80
 His Ser Lys Glu Ile Glu Arg Leu Gln Lys Gln Ile Asp Arg His Lys
 85 90 95
 Lys Lys Ile Gln Gln Leu Lys Asn Asn His
 100 105

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<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 17

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23

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<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 18

aagtgggctt ttgctcatgt gtcac

25

<210> 19

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 19

tgagctcaga tatggcagga agaagcggag acagagagga atggcag

47

<210> 20

<211> 34

<212> DNA

10083315-02270

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 20

atataagctt tcaatgctca ctattcttta ggta

34

<210> 21

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Tat-derived cellular targeting sequence

<400> 21

agatatggca ggaagaagcg gagacagaga gga

33

<210> 22

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Tat-derived cellular targeting sequence

<400> 22

Arg Tyr Gly Arg Lys Lys Arg Arg Gln Arg Gly
1 5 10

<210> 23

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 23

tgagctcagg atatggcagg aagaagcgga gacagagagg aggctcgg

48

<210> 24

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<400> 24

atataagctt tcaatgctca ctattcttta ggta

34

<210> 25

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<211> 25
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Polypeptide consisting of amino acids 22-46 of the
 mature form of rat IF1

<400> 25

Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys
1					5				10					15	
Thr	Arg	Glu	Gln	Leu	Ala	Ala	Leu	Lys							
			20				25								

<210> 26
 <211> 17
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Polypeptide consisting of amino acids 42-58 of the
 mature form of rat IF1

<400> 26

Leu	Ala	Ala	Leu	Lys	Lys	His	His	Glu	Asp	Glu	Ile	Asp	His	His	Ser
1				5				10						15	
Lys															

<210> 27
 <211> 7
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Cellular transport sequence

<400> 27

Arg	Lys	Lys	Arg	Arg	Gln	Arg
1				5		

<210> 28
 <211> 25
 <212> PRT
 <213> Rattus norvegicus

<400> 28

Met	Ala	Gly	Ser	Ala	Leu	Ala	Val	Arg	Ala	Arg	Leu	Gly	Val	Trp	Gly
1				5				10						15	
Met	Arg	Val	Leu	Gln	Thr	Arg	Gly	Phe							
			20				25								

<210> 29

10083815-032703

<211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 29
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu Ala Leu
 20 25 30
 Lys Lys

<210> 30
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
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 sequence.

<400> 30
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr
 20

<210> 31
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 31
 Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu Glu
 1 5 10 15
 Asp Arg Tyr Phe
 20

<210> 32
 <211> 20
 <212> PRT
 <213> Artificial Sequence

20230915-022702

<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 32

Arg	Glu	Ala	Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp
1				5					10					15	
Arg	Tyr	Phe	Arg												
			20												

<210> 33

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 33

Glu	Ala	Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg
1				5					10					15	
Tyr	Phe	Arg	Glu												
			20												

<210> 34

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 34

Ala	Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg	Tyr
1				5					10					15	
Phe	Arg	Glu	Lys												
			20												

<210> 35

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 35

Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg	Tyr	Phe
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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<210> 39

<211> 20
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 39

Gly	Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys	Thr
1				5					10					15	
Arg	Glu	Gln	Leu												
			20												

<210> 40
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 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 40

Lys	Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys	Thr	Arg
1				5					10					15	
Glu	Gln	Leu	Ala												
			20												

<210> 41
 <211> 20
 <212> PRT
 <213> Artificial Sequence

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<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 41

Arg	Glu	Lys	Ala	Glu	Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys	Thr	Arg	Glu
1				5					10					15	
Gln	Leu	Ala	Ala												
			20												

<210> 42
 <211> 20
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1

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 20220515-033703

sequence.

<400> 42

Glu Lys Ala Glu Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln
 1 5 10 15
 Leu Ala Ala Leu
 20

<210> 43

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 43

Lys Ala Glu Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu
 1 5 10 15
 Ala Ala Leu Lys
 20

<210> 44

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 44

Ala Glu Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu Ala
 1 5 10 15
 Ala Leu Lys Lys
 20

<210> 45

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 45

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys
 1 5 10

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<210> 46
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
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<400> 46
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg
 1 5 10

<210> 47
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 47
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu
 1 5 10

<210> 48
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 48
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys
 1 5 10

<210> 49
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 49
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala

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1 5 10 15

<210> 50
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 50
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15

<210> 51
 <211> 17
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 51
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu

<210> 52
 <211> 18
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 52
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp

<210> 53
 <211> 19
 <212> PRT
 <213> Artificial Sequence

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<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 53

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
1 5 10 15
Glu Asp Arg

<210> 54

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 54

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
1 5 10 15
Glu Asp Arg Tyr
20

<210> 55

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 55

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
1 5 10 15
Glu Asp Arg Tyr Phe
20

<210> 56

<211> 22

<212> PRT

<213> Artificial Sequence

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<223> Synthetic peptide fragment derived from rat IF1
sequence.

<400> 56

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu

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<210> 60

<211> 26
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<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 60

Ser	Ile	Arg	Glu	Ala	Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu
1				5				10						15	
Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys	Thr	Arg						
			20					25							

<210> 61
 <211> 27
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 61

Ser	Ile	Arg	Glu	Ala	Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu
1				5				10						15	
Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys	Thr	Arg	Glu					
			20					25							

<210> 62
 <211> 28
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 62

Ser	Ile	Arg	Glu	Ala	Gly	Gly	Ala	Phe	Gly	Lys	Arg	Glu	Lys	Ala	Glu
1				5				10						15	
Glu	Asp	Arg	Tyr	Phe	Arg	Glu	Lys	Thr	Arg	Glu	Gln				
			20					25							

<210> 63
 <211> 29
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1

20230515 032702

sequence.

<400> 63

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu
 20 25

<210> 64

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 64

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu Ala
 20 25 30

<210> 65

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 65

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu Ala Ala
 20 25 30

<210> 66

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic peptide fragment derived from rat IF1
 sequence.

<400> 66

Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu Ala Ala Leu

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20

25

30

<210> 67
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 <213> Artificial Sequence

<220>
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 sequence.

<400> 67
 Ser Ile Arg Glu Ala Gly Gly Ala Phe Gly Lys Arg Glu Lys Ala Glu
 1 5 10 15
 Glu Asp Arg Tyr Phe Arg Glu Lys Thr Arg Glu Gln Leu Ala Ala Leu
 20 25 30
 Lys

<210> 68
 <211> 35
 <212> PRT
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<220>
 <223> Epitope tag sequence.

<400> 68
 Met Gly Gly Ser His His His His His Gly Met Ala Ser Met Thr
 1 5 10 15
 Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp
 20 25 30
 Pro Ser Ser
 35

<210> 69
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Organellar targeting sequence

<400> 69
 Met Ala Gly Ser Ala Leu Ala Val Arg Ala Arg Leu Gly Val Trp Gly
 1 5 10 15
 Met Arg Val Leu Gln Thr Arg Gly Phe
 20 25

<210> 70

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<211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Cellular transport sequence

<400> 70
 Gly Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Gly
 1 5 10

<210> 71
 <211> 107
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Fusion protein

<400> 71
 Met Gly Gly Ser His His His His His His Gly Met Ala Ser Met Thr
 1 5 10 15
 Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Asp Lys Asp
 20 25 30
 Pro Ser Ser Gly Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Gly
 35 40 45
 Met Ala Gly Ser Ala Leu Ala Val Arg Ala Arg Leu Gly Val Trp Gly
 50 55 60
 Met Arg Val Leu Gln Thr Arg Gly Phe Ser Ile Arg Glu Ala Gly Gly
 65 70 75 80
 Ala Phe Gly Lys Arg Glu Lys Ala Glu Glu Asp Arg Tyr Phe Arg Glu
 85 90 95
 Lys Thr Arg Glu Gln Leu Ala Ala Leu Lys Lys
 100 105

<210> 72
 <211> 321
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide that codes for fusion protein.

<400> 72
 atgggggggtt ctcatcatca tcatcatcat ggtatggcta gcatgactgg tggacagcaa 60
 atgggtcggg atctgtacga cgatgacgat aaggatccga gctcgggcta tggcaggaag 120
 aagcggagac agagaaggag aggtatggca ggctcggcgt tggcgggttcg ggctcggctc 180
 ggtgtctggg gtatgagggt cctgcaaacc cgaggcttct ccatccgaga agctgggtggg 240
 gccttcggga aacgagagaa ggctgaagag gatcggtact tccgagagaa gactagagag 300
 cagctggctg ccttgaagaa g 321

10083815.0000